

**REMARKS**

Claims 1-34 were presented for examination, and claims 1-34 were rejected. In the present amendment, claims 35 and 36 were added. No new matter was introduced. Upon entry of the present amendment, claims 1-36 will be pending in this application, of which claims 1, 14, 21, 25, 29, 33-36 are independent. Applicants submit that pending claims 1-36 are in condition for allowance.

The following comments address all stated grounds of rejection. Applicants urge the Examiner to pass the claims to allowance in view of the remarks set forth below.

**Claim Amendments**

Claims 35 and 36 have been added to more fully appreciate the Applicants' claimed invention. Support for the added claims can be found on page 4, lines 8-22; page 7, lines 6-21; page 11, lines 19-22; Figures 6 and 7; and throughout the remainder of the specification. No new matter has been introduced. Applicants submit that the presently pending claims are in condition for allowance.

**Claim Rejections under 35 U.S.C. §103**

I. **Claims 1-34 Rejected under 35 U.S.C. §103 as Unpatentable over System View in view of Paredis**

Claims 1-34 are rejected under 35 U.S.C. §103(a) as being unpatentable over the reference of System View by Elanix® from Elanix Inc. (1994-199) ("System View") in view of the reference of "Composable Models for Simulation-Based Design", Paredis et al. (2000)("Paredis"). Applicants respectfully traverse this rejection.

For ease of the discussion, summaries of the claimed invention and the references of System View and Paredis are provided below.

A. Summary of Claimed Invention

The claimed invention is directed towards the use of composite signals for model processing, such as model processing in a block diagram modeling environment. Signals in a block diagram model represent streams of values that traverse along the connections between blocks in the model. Signals can have different attributes such as name, data type, numeric type and dimensionality. A composite signal represents a set of signals that are grouped together to form a signal entity. A composite signal can be formed from a multiplexer block in a model. The multiplexer receives one or more input signals from one or more blocks and groups the one or more input signals together to form a composite signal. The composite signal can be provided as output from the multiplexer to one or more blocks. As such, the composite signal provides a facility for grouping a set of heterogeneous and homogenous signals while preserving the attributes of each signal. In this manner, each signal of a composite signal can be processed by a receiving block as if it received the signal as an independent signal. For example, a demultiplexer block can receive a composite signal as input and output one or more independent signals separated from the composite signal.

B. Summary of System View

The System View reference is a user guide for a version of the System View product manufactured by Elanix, Inc. The System View product is a dynamic systems environment for the design and simulation of engineering or scientific problems. System View provides an

environment for a building visually oriented simulation models using symbolic tokens representing functional blocks. The symbolic tokens are selected from various libraries and connected together to design a system. The user can specify parameters for each symbolic token via a graphical user interface. The System View reference does not describe any use of composite signals as in the claimed invention.

### C. Summary of Paredis

Paredis is directed towards the concept of combining both form models, such as CAD models, and behavior models, such as simulations, of a mechatronic system. Paredis describes a modeling and design paradigm based on composition. That is, the modeling of systems can be viewed as combining the components of form models with the components of behavior models to provide a system level simulation model. In order to support this composition paradigm, the modeling and design of the Paredis framework describes the use of component objects in which the form and the behavior of a component are combined. By designing models with such components, a designer provides for both the design and simulation of systems in the model. These components can be organized in a hierarchical manner to form component libraries.

Paredis also describes the use of a port-based modeling paradigm to define how components interact with other components in the system. Ports correspond to points where a component exchanges energy with the environment, and interactions between components are represented by connections between ports. There is one port for each separate interaction point and the type of the port corresponds to the energy type (see page 4, lines 6-8, Paredis). As a reflection of the underlying physics of the energy transfer, the connections and ports are undirected. Energy transfer does not have an input and output as energy can flow in either

direction through the ports. Although Paredis briefly mentions signal based connections in comparison to energy flow type connections, Paredis does not describe any energy flow or signal comprising a composite signal as in the claimed invention.

D. Non-obviousness of Independent Claims 1, 21, 25

Independent claims 1, 21, and 25 are directed to a method, program and apparatus, respectively. These independent claims recite model processing steps of providing a plurality of blocks, and generating a plurality of output signal values from the plurality of blocks. The claims further recite *generating the plurality of output signals values as an ordered set in a multiplexer as a first composite signal*, and outputting the first composite signal. That is, the multiplexer of the claimed invention groups the plurality of generated output signals to provide as output a composite signal comprising an ordered set of the generated output signals.

All the claim limitations must be taught or suggested by the prior art. System View in view of Paredis does not teach or suggest *generating the plurality of output signals values as an ordered set in a multiplexer as a first composite signal*. As discussed above, System View is a user guide to a version of the System View product from Elanix, Inc. and does not disclose, teach or suggest the *generating the plurality of output signals values as an ordered set in a multiplexer as a first composite signal*. The Examiner cites Paredis for the purpose of suggesting that one ordinarily skilled in the art might modify the reference of System View to use the mechatronic system components of Paredis to provide a hierarchy of functional blocks with Internet access.

First of all, the recitation of independent claims 1, 21, and 25 is not directed towards a hierarchy of functional blocks with Internet access. Rather, these independent claims recite *generating the plurality of output signals values as an ordered set in a multiplexer as a first*

*composite signal*. Therefore, even if Paredis teaches or suggests a hierarchy of functional blocks with Internet access, Paredis fails to bridge the factual deficiencies of the System View reference with respect to the claimed invention.

Moreover, Paredis does not disclose, teach or suggest *generating the plurality of output signals values as an ordered set in a multiplexer as a first composite signal*. Rather, as discussed above, Paredis combines the aspects of form modeling and behavior modeling into component objects for simulation-based design. Paredis does not disclose, teach or suggest *generating the plurality of output signals values as an ordered set in a multiplexer as a first composite signal*. Instead, Paredis discusses energy transfer between components via connections and ports as to represent interactions between components. In Paredis, each port represents one interface point and the port type matches the type of energy transfer (see page 4, lines 6-8, Paredis). In contrast, the claimed invention groups generated output signals to provide as output a composite signal comprising an ordered set of the generated output signals. Therefore, Paredis fails to teach or suggest *generating the plurality of output signals values as an ordered set in a multiplexer as a first composite signal*. As such, Paredis fails to bridge the factual deficiencies of the System View reference.

For at least the aforementioned reasons, neither System View nor Paredis, alone or in combination, discloses, teaches or suggests *generating the plurality of output signals values as an ordered set in a multiplexer as a first composite signal*. Therefore, Applicants contend that System View in view of Paredis fails to detract from the patentability of independent claims 1, 21, and 25. Claims 2-13 depend on and incorporate all the patentable limitations of independent claim 1. Claims 22-24 depend on and incorporate all the patentable limitations of independent claim 21. Claims 26-28 depend on and incorporate all the patentable limitations of independent

claim 25. Thus, System View in view of Paredis fails to detract from the patentability of claims 2-13, 22-24, and 26-28. Accordingly, Applicants respectfully request the Examiner to withdraw the Examiner's rejection of claims 1-13, 21-24, and 25-28 under 35 U.S.C. §103.

E. Non-obviousness of Independent Claims 29, 33, and 34

Independent claims 29, 33, and 34 are directed to a method, program and apparatus, respectively. These independent claims recite the model processing step of providing a plurality of blocks. The blocks represent a functionality entity that generates one or more output signal values. The claims further recite *grouping the output signals as an ordered set in a multiplexer as a composite signal*, and outputting the composite signal. That is, the multiplexer of the claimed invention groups the output signals as an ordered set to provide as output a composite signal.

All the claim limitations must be taught or suggested by the prior art. System View in view of Paredis does not disclose, teach or suggest *grouping the output signals as an ordered set in a multiplexer as a composite signal*. The Examiner cites Paredis for the purpose of suggesting that one ordinarily skilled in the art might modify System View to use the mechatronic system components of Paredis to provide a hierarchy of functional blocks with Internet access. However, the claimed invention recites *grouping the output signals as an ordered set in a multiplexer as a composite signal*. Furthermore, Paredis fails to teach or suggest *grouping the output signals as an ordered set in a multiplexer as a composite signal*. Instead, Paredis discusses simulation-based design using component objects that combine form based and behavior based modeling. Paredis not discuss any composite signals as in the claimed invention. Therefore, Paredis fails to bridge the factual deficiencies of the System View reference.

For at least the aforementioned reasons, neither System View nor Paredis, alone or in combination, discloses, teaches or suggests *grouping the output signals as an ordered set in a multiplexer as a composite signal*. Therefore, Applicants contend that System View in view of Paredis fails to detract from the patentability of independent claims 29, 33 and 34. Claims 30-32 depend on and incorporate all the patentable limitations of independent claim 29. Thus, System View in view of Paredis fails to detract from the patentability of claims 30-32. Accordingly, Applicants respectfully request the Examiner to withdraw the Examiner's rejection of claims 29-34 under 35 U.S.C. §103.

F. Non-obviousness of Independent Claim 14

Independent claim 14 is directed towards a block diagram model processing method. This independent claim recites the steps of providing a first block and a second block and generating a plurality of output signals values from the first and second block. Claim 15 further recite *grouping the output signals as an ordered set in a multiplexer as a composite signal*, and processing the composite signal in a third block. That is, the multiplexer of the claimed invention groups the plurality of output signals from the first and second blocks to provide a composite signal to a third block for processing. The composite signal comprises an ordered set of output signal values from the first and second block.

All the claim limitations must be taught or suggested by the prior art. System View in view of Paredis does not disclose, teach or suggest *grouping the output signals as an ordered set in a multiplexer as a composite signal*. The Examiner cites Paredis for the purpose of suggesting that one ordinarily skilled in the art might modify System View to use the mechatronic system components of Paredis to provide a hierarchy of functional blocks with Internet access.

However, as discussed above, Paredis fails to disclose, teach or suggest *grouping the output signals as an ordered set in a multiplexer as a composite signal* as in the claimed invention.

Therefore, Paredis fails to bridge the factual deficiencies of the System View reference.

For at least the aforementioned reasons, neither System View nor Paredis, alone or in combination, discloses, teaches or suggests *grouping the output signals as an ordered set in a multiplexer as a composite signal*. Therefore, Applicants contend that System View in view of Paredis fails to detract from the patentability of independent claim 14. Claims 15-20 depend on and incorporate all the patentable limitations of independent claim 14. Thus, System View in view of Paredis fails to detract from the patentability of claims 15-20. Accordingly, Applicants respectfully request the Examiner to withdraw the Examiner's rejection of claims 14-20 under 35 U.S.C. §103.

## II. New Independent Claims 35 and 36

Independent claim 35 is directed towards a method for providing a composite signal in a modeling environment. The claim recites the steps of providing a plurality of output signals from one or more blocks, generating a *composite signal comprising a set of the plurality of output signals*, and providing the composite signal as an output signal. None of the cited references, including System View and Paredis, disclose, teach or suggest generating a *composite signal comprising a set of the plurality of output signals*.

Independent claim 36 is directed towards a method for graphically representing a composite signal in a modeling environment. The claim recites the step of providing a plurality of output signals from one or more blocks and each output signal is graphically indicated by a signal identifier. The claim further recites *providing a composite signal identifier to graphically*



*indicate a grouping of signal identifiers.* The composite signal identifier represents a composite signal comprising a set of the plurality of output signals. None of the cited references, including System View and Paredis, disclose, teach or suggest *providing a composite signal identifier to graphically indicate a grouping of signal identifiers.*

Applicants respectfully submit that none of the cited references, including System View and Paredis, disclose, teach or suggest each and every element of claims 35 and 36. Therefore, Applicants respectfully submit that claims 35 and 36 are patentable and in condition for allowance.

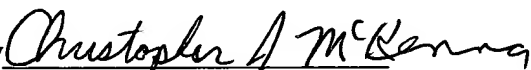
### **CONCLUSION**

In view of the remarks set forth above, Applicants contend each of the presently pending claims in this application is in immediate condition for allowance. Accordingly, Applicants respectfully request the Examiner to pass the claims to allowance.

If the Examiner deems there are any remaining issues, we invite the Examiner to call the Applicants' Attorney at the telephone number identified below.

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Respectfully submitted,  
LAHIVE & COCKFIELD, LLP

By   
Christopher J. McKenna  
Registration No.: 53,302  
Attorney For Applicants

Lahive & Cockfield, LLP  
28 State Street  
Boston, Massachusetts 02109  
(617) 227-7400  
(617) 742-4214 (Fax)